Principles and RECOMMENDATIONS

The Master Plan comprises four elements: guiding principles, goals, existing conditions, and recommendations.

Guiding principles were derived from the ideas of the Basin founders and from discussions with hundreds of Basin users and park managers. *Goals* reflect the Basin's five interrelated systems—the historic landscape, the natural landscape, the river, the parks, and the parkways and paths. Subcommittees of the citizens advisory committee, organized around these systems, helped to develop *goals* for each of them.

The discussion of *existing conditions* and issues facing the Basin is organized by resource type—the river itself; river features and structures (banks, seawalls, landings, canals, and dams); parklands and pathways; parkland structures (foot bridges, boat and bath houses, pools, athletic fields, performance structures, monuments, and maintenance facilities); and parkways and vehicular bridges. *Recommendations* follow within each section. (More detailed descriptions of each project area and recommended improvements appear in the "Project Areas" section on page 89.)

Guiding Principles for the Charles River Basin

The broad ideas that inspired the original design of the Basin should continue to provide guidance to future decision-makers as they adapt the Charles River Basin to the needs and demands of the twenty-first century.

The Charles River Basin is the heart of a connected regional system.
The Basin was conceived as the heart of an interconnected system of landscape reservations. Its creators viewed it as vitally important that the Basin connect to the western suburbs and to various other open spaces, such as Soldiers Field, Fresh Pond, Mt. Auburn Cemetery, and the Emerald Necklace. The basic principle of connection is central to the Metropolitan Park System.

The Basin shall be a clean and healthy environment.
A major impetus behind the creation of the Back Bay residential district in the mid-1850s and the Charles River Basin after 1900 was to improve the quality of the river, an effort that continues to this day. The rise in use that has accompanied improved water quality was one of the motivating factors behind doing this Master Plan.

River scenery shall be enhanced.
"For those who cannot travel, free admission to the best scenery of the neighborhood is desirable," Eliot wrote. "It is indeed necessary, if life is to be more than meat." Eliot argued that urban development had increased the amount of time and distance urban residents must cross to reach rural, open spaces; for them and for those who could not afford to travel, enlightened municipal officials had to "acquire, for the free use and enjoyment of all, such neighboring fields, woods, pond-sides, river-banks, valleys, or hills as may present, or may be made to present" for their scenic, health, and recreational value. In the twentieth century roadways and unrelated structures have encroached upon these open spaces. Planners today are working to mitigate those impacts.

HARVARD'S WELD BOAT HOUSE AND THE ANDERSON BRIDGE.

Structures shall be subsidiary to and complement the landscape.
The Charles River Basin was designed to provide restorative scenery for the urban dweller and preserve a breadth of view. Eliot argued that "large and conspicuous buildings, as well as statues and other monuments" subverted the quality of open space and could never be viewed as "ends in themselves." Buildings, bridges, roads, trees, and flowers should exist within parkland only as "a means auxiliary

and contributive to a larger end,—namely, the general landscape." Future planners should evaluate the location, massing, height, profile, materials, texture, and colors of all structures in the Basin to determine their fit in the landscape.

Only structures of the very best design shall be built in or along the Basin.

"The river runs through the very center of the metropolis," Charles Eliot noted in 1894, "and upon its shores should naturally be placed its most attractive structures, its monuments, and its finest dwellings." In his view, the Basin was the metropolitan region's "Court of Honor," a role demanding that even the most utilitarian structures reflect the highest design quality.

Formal and picturesque design expressions shall be employed and balanced according to local circumstance.

Both Eliot and Shurcliff implemented this principle of balance in their work. Eliot wrote that circumstance—whether parks and parkways existed in a "confined urban space bounded by dominating buildings" or in a more pastoral setting—should dictate whether they would be "absolutely formal or strikingly picturesque." The intensity of use and the metropolitan setting of the Esplanade, for example, suggested a more formal design. Shurcliff later combined a formal layout of paths, walls, and landings with a massing of trees and shrubs to achieve an effective balance of the formal and the picturesque.

The balancing of architectural and natural forms is characteristic of the Lower Basin and to some extent of the upper stretches, where handsome boathouses and elegant bridges, walls, and steps punctuate the wooded shoreline. Landscape treatments and maintenance should define and support formal and informal zones within the reservation.

Parkways and pathways shall be fully integrated with the river landscape, not dominate it.

While Eliot acknowledged the usefulness of parkways in providing access from the western suburbs to downtown Boston, he insisted that roads and pathways were merely "instruments by which the scenery is made accessible and enjoyable." As integral elements of the reservation, the parkways were intended to provide access to the best scenery of the region while not intruding onto that scenery themselves.

Clearly Eliot and the Metropolitan Park Commission planners did not anticipate the amount of traffic the parkways would be compelled to accommodate. The preeminence of automobile travel has made it difficult to conceive of them as leisurely pleasure drives. Yet the parkways still have potential as attractive landscaped boulevards that complement the river setting. They should never be walled off from the river. Hundreds of thousands of motorists have developed an image of the city from the views of water and parkland they have while driving the parkways. Parkways must be returned to their intended place within the landscape. The impact of parkway traffic on the park user's experience must be lessened.

Access to the water's edge and surface shall be provided through a variety of means.

Eliot had suggested building overlooks and creating a system of electric passenger ferries to get people out onto the river. Shurcliff used islands, lagoons, pedestrian bridges, overlooks, and boat landings to allow pedestrians direct access to the shoreline. Future managers should seize every opportunity to restore visual access to the river along the Upper Basin and greater physical access along the entire Basin shore.

UNION BOATHOUSE LANDING, LOWER BASIN.

The Basin shall be a democratic landscape where people from all walks of life may congregate.

Frederick Law Olmsted was probably the first American planner to express the conviction that parks and other open spaces provided opportunity for the mixing and conversation of all classes. Deeply influenced by Olmsted, Eliot wrote of the need for "broad gravel-ways well shaded by

trees that afford pleasant out-of-door halls where crowds may mingle in an easy social life" as well as for spaces that permitted a solitary encounter with nature. Parklands continue to be valued for the opportunity for chance encounters with others and for the open space they offer in densely settled urban areas.

THE PLAYING FIELDS AND PARKING LOTS AT DALY FIELD CONFLICT WITH THE RIVER LANDSCAPE.

A VARIETY OF USES SHALL BE ACCOMMODATED WITHOUT DETRACTING FROM THE RIVER LANDSCAPE.

Eliot advocated providing for the needs of active users in his effort to have parkland set aside throughout the metropolitan area. He wrote of the Cambridge riverfront, "Because this place will be available for the recreation of the crowded population of East Cambridge, we would have this reservation possess a considerable breadth, in order to make room for children's games and other uses quite distinct from the main purposes of the purchase, which are the preservation of the view of the river Basin and provision for boating on its waters." Playgrounds, ball fields, tennis courts, concert grounds, and gardens could all exist within the parkland, he wrote, "provided they are so devised as not to conflict with or detract from the breadth and quietness of the general landscape." Fostering a rich mix of uses and users helps to animate the park landscape and makes the experience safer and more interesting for everyone.

THE CHARACTER-DEFINING FEATURES OF THE HISTORIC LANDSCAPE SHALL BE PRESERVED.

The Charles River Basin is a living park that needs to evolve to meet the recreation needs of current and future generations, yet, the historic character and features of the Basin must be respected. Rather than what Whitehill termed a "slavish antiquarianism," revitalization in the spirit of what has worked well before is appropriate for much of the Basin. The planning and design intentions of Eliot and Shurcliff have proven adaptable to changing times and should continue to guide the Basin's management.

Particular plantings that hold an important identity and association for the public should be protected, such as the London planetrees on Memorial Drive and the willow trees in Herter Park.

A THEME AND VARIATIONS SHALL BE STATED BY DESIGN.

The linear reservation should be experienced as a unified whole through a consistent treatment of the parkways and a constant reference to the river that ties it together. Simultaneously the transition in character from urban to suburban as one moves upstream should be enhanced through the choice of plant materials and degree of finish. Develop parkland areas as open spaces framed and punctuated by vegetation. Avoid linear alignments of vegetation within parkland areas, reserving such arrangements to reflect the linearity of the Basin's parkways.

Establish linear tree planting along the parkways to serve as the connecting threads of the Basin. Screen intrusive views with tightly spaced trees and shrubs. Maintain wider spacing where

open views to the river are desired.

The recommended palette of parkway trees shall be used in ways that establish a unified character along stretches of parkway. Enough variety shall be introduced to assure horticultural health.

WILLOWS AT CHARLESGATE, LOWER BASIN.

There are a few zones where a very narrow palette of species is appropriate, most notably the Cambridge Esplanade at MIT and the London planetree allée near Harvard University. Some degree of horticultural variety should be introduced into the rest of the parkway system. With consistency of form established, changing tree species every 200 or 300 feet is recommended.

Ornamental plantings shall be used to mark and emphasize transition points and gateways and embellish significant structures.

Historic boathouses, monuments, ornamental stairs, and bridges all deserve special treatment. The abutting banks of prominent bridges should be improved with signature plantings to enhance their appearance. The willows at Charlesgate are an excellent example, as are ornamental plantings on selected rotaries and traffic islands.

The diversity of landscape treatments—including ground covers and grasses, bank treatments, tree species, and the selective introduction of shrubs throughout the Basin—shall be increased.

Increasing diversity of plant materials will provide for horticultural health, educational opportunity, and more diverse habitat for wildlife. Shrubs shall be used only where security is not a problem.

Native plants shall be favored in the Basin.

Eliot advised planners to preserve or create only that scenery "which is developed naturally from the local circumstances" of the area. He advised giving preference to native plants "without avoiding exotics of kinds which blend easily." Non-natives that are compatible in character with indigenous vegetation are also acceptable.

The conditions for a sustainable and maintainable landscape shall be established.

Maintenance operations and environmental conditions must both be supported when making recommendations for plant species and landscape treatment. Environmental conditions must be respected when proposing species and treatments.

General Management Goals for the Basin

These general management goals have evolved directly from goal-setting sessions of the Citizen Advisory Committee and reiterate many of the principles stated above (see "Appendix C—Public Participation"). They are organized around five focus areas.

The Historic Landscape

- Preserve the essential character-defining features of the historic landscape while adapting the Basin for contemporary uses
- Subordinate all manmade structures to the landscape and design them to complement the pastoral river setting
- Balance formal and picturesque "natural" design expressions
- Interpret the forces that shaped the Charles River Basin in order to educate the next generation of Basin advocates

SUNBATHERS, STROLLERS AND BICYCLISTS OFTEN COMPETE FOR THE SAME SPACE ON THE ESPLANADE.

The Natural Landscape

- Diversify plant communities and maintenance regimes in the Basin for a healthier and more attractive landscape
- Enhance wildlife habitats while managing invasive species of plants and animals
- Establish a sustainable and maintainable landscape
- Interpret the natural resource systems of the Basin and the region

The River

- Achieve swimmable and fishable water quality
- Maximize public access to the water while ensuring a safe and quality experience for all
- Improve and maintain the channel from Watertown to Beacon Hill as a premier resource for boating
- Improve community outreach and raise awareness of existing and future public-access opportunities
- Establish regular opportunities for water users to coordinate their activities and voice their concerns

The Parks

- Assure that all park uses shall be public in nature or provide direct and substantial public benefits
- Support a variety of uses that relate to and directly benefit from the river setting
- Improve public access to the banks and water for people of all ages, abilities, and backgrounds
- Balance and distribute active and passive uses along the banks in a manner that minimizes conflicts and protects Basin resources
- Support use of the Basin during the winter months and evening hours wherever possible
- Provide a wide range of regional events and programs while mitigating impacts on both the Basin and surrounding neighborhoods
- Provide multiuse public facilities and spaces that are flexible, well-designed, and easily maintained

The Parkways and Paths

- Provide safe and continuous bicycle, skating, and pedestrian access along the entire length of the Basin. Separate footpaths and bike paths where doing so will not create excessive pavement near the shoreline
- Provide a comfortable, safe, and secure experience for visitors by reducing congestion and minimizing conflicts on the paths and water way
- Establish easier and safer pedestrian access across the parkways and bridges
- Reduce the impact of cars on pedestrian paths and parklands while reinforcing the identity of the parkways as landscaped pleasure drives. Strengthen the parkways and boulevard trees as the connecting threads of the Basin.

HISTORIC RESOURCES AND INTERPRETATION

The Charles River Basin is one of the most significant park landscapes in the country. The Basin is a National Historic Civil Engineering Landmark. The eastern end of the Basin, from the dam and streetcar viaduct to the Eliot Bridge, is listed in the National Register of Historic Places. The condition of historic resources and specific preservation recommendations are woven into the sections dealing with the river, riverbank, river structures, parklands, parkland structures, and parkways.

Recommendations for Basin Preservation

- **Conduct archaeological reconnaissance and field investigation before any landscape work in areas where archaeological evidence is believed or known to exist.** All such work will be performed in consultation with MDC archaeologists and the Massachusetts Historical Commission, from which an archaeological permit will be required.

  Sixteen sites of prehistoric occupation have been documented within the Basin, with evidence demonstrated or believed to exist in eleven of them. Given the known resources, which are suggestive and compelling, any master plan recommendations that would result in ground or landscape alterations or modifications of grade must be preceded by an evaluation of potential impacts on prehistoric archaeological resources.

- **Expand the Charles River Basin National Historic District by adding the area between the Eliot Bridge, the district's current western boundary, and Watertown Dam.** The entire Basin was subject to tidal flow. Park planners and the Basin's chief engineer considered the area between the historic Charles River Dam and the Watertown Dam one reservation. Their design for the Basin converted the river to a constant-level fresh water impoundment. Information for the existing Charles River Basin Historic District should be upgraded with more photographs and site-specific mapping; much of this work has been done in preparing this Master Plan.

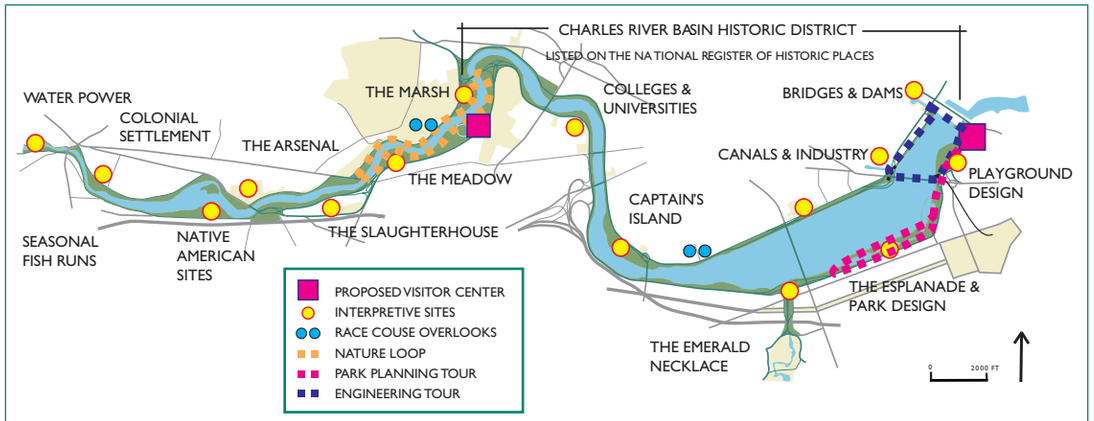
- **Prepare historic landscape reports for key landscapes, including the Boston and Cambridge esplanades.**

- **Undertake appropriate preservation treatments for the most significant buildings and landscapes.** Where applicable, planners should follow the Secretary of the Interior's Standards for the Treatment of Historic Properties (see below) and consult the National Park Service Preservation Briefs series for guidance on specific preservation issues.

- **Train maintenance staff in standard operating procedures and proper preservation treatments.**

- **Prepare historic structures reports for significant MDC buildings.** Historic structure reports should be undertaken on the former stables and maintenance complex at Western Avenue, the Charles River Dam complex designed by Guy Lowell, the Fens Gate House, the Magazine Beach administrative building, and the Herter Center.

  Before the reuse of the former *Charles River Speedway stables* at Western Avenue, a



INTERPRETIVE THEMES

historic structures report for the complex and standard operating procedures for its maintenance should be prepared. If the MDC

CHARLES RIVER SPEEDWAY HEADQUARTERS AND STABLES, CIRCA 1900

cannot fully use the structure, it should consider historic structure lease options to use and protect the complex and to generate funds for its restoration.

The *Fens Gate House* appears to be in good condition, but it should be the focus of a historic structures report in view of the plans for bringing a pedestrian pathway past it that would link the Fens with the river. This pathway will draw new attention to the gatehouse and offers a superb opportunity to interpret the tributaries leading to the Basin, including Stonybrook and the Muddy River.

BEFORE STORROW DRIVE WAS BUILT, THE FENS GATE HOUSE STOOD DIRECTLY ON THE RIVER, AS SEEN IN THIS PHOTO TAKEN AFTER 1910.

Because of its prominent riverside location and the importance of its designer, the *Magazine Beach administration building* should have a historic structures report. The lack of windows and light makes any kind of public use difficult without substantial alterations, but the report should explore possible alternative public uses.

- **Conduct additional research on important historic properties and types,** especially those that are not currently well understood.

- **Identify appropriate public uses for vacant and underutilized historic resources. Consider lease arrangements with preservation restrictions to generate maintenance funds. Develop partnerships with private parties to maintain historic resources.** Until appropriate uses can be found, vacant structures should be mothballed according to the standards outlined in National Park Service Preservation Brief #31, *Mothballing Historic Buildings* (1993).

- **Require private owners of historic boathouses within the Basin to prepare historic structure reports and maintenance manuals as a condition of their leases.**

- **Develop in-house procedures to involve the state and local historic preservation agencies in decisions affecting historic resources in the Charles River Basin.** Define categorical exemptions from review, such as maintenance and repair that do not alter historic structures. Define information standards and processes for other actions.

Certain historic resources merit special preservation treatment as defined in the Secretary of the Interior's 1992 *Standards for the Treatment of Historic Properties*.

✶ The Basin's most important historic resources, including the historic overlooks and landings along the Esplanade and in Watertown,

should be **restored**—that is, returned fully to their original condition. The historic benches with shade structures in the Lower Basin should be fully restored, using appropriate materials and repositioned if necessary.

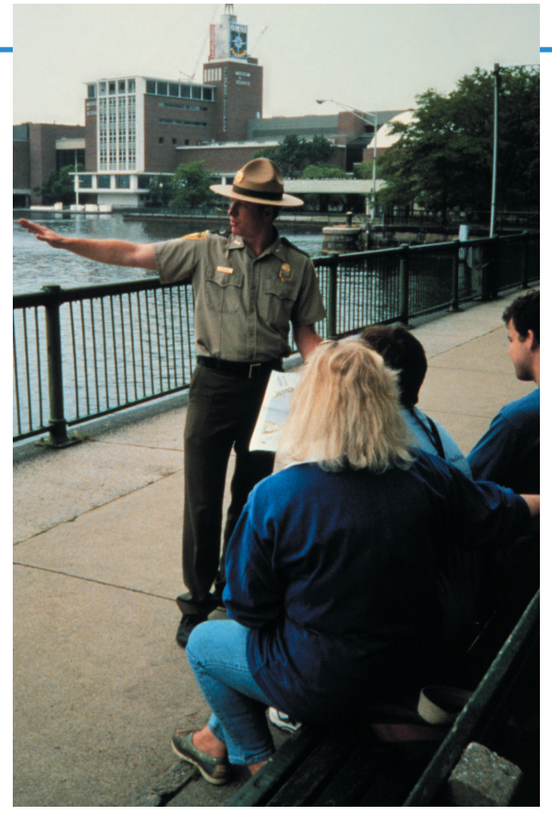
- ✶ Crucial character-defining elements such as seawalls, certain bridges, historic buildings in reasonably good condition, and certain plantings such as the London planetrees on Memorial Drive, should be **preserved**—that is, their existing form, integrity, and materials should be stabilized and protected.
- ✶ The **rehabilitation** standard, in which the most important historic features of a structure are preserved while allowing alterations for compatible uses, should be applied to bridges and buildings in need of major repairs or of retrofitting new uses that will help preserve them. Some of the concrete bridges in poor condition, the MDC Boathouse at the historic Charles River Dam, and the maintenance complex at the Arsenal Street Bridge fall into this category.
- ✶ The **reconstruction** standard, which calls for the replication of a structure's general historic appearance, should be applied only to certain historic site details considered worth recapturing, such as bench or streetlight designs and certain landscape plantings such as those along the Cambridge and Boston esplanades.

Public Information and Interpretation

The Basin is of great historic, architectural, engineering, and environmental interest, yet many visitors are unaware of its significance. Numerous themes could be presented, including the history of industry and urban development along the river, park planning and design, and natural systems in an urban setting. While markers exist in a few locations, no overall interpretive plan has ever been developed for the Basin.

Existing Conditions and Issues

The few historic markers in the Upper Basin are worn to the point that they can no longer be read. Along the Esplanade, most monuments and memorials are in poor condition and offer little explanation of their significance.



AN MDC RANGER EXPLAINS THE HISTORIC CHARLES RIVER BASIN TO VISITORS

Interpretation

- **Develop a public education and interpretive program.** There is little community awareness of the Basin's history, extent, and public programs. Two programs are dedicated to public access to the river, and several of the sailing and rowing facilities offer public programs. Most suffer from low profiles. A common perception that use of the river is limited and elitist must be overcome. Public awareness of the Basin's history and value must also be heightened through a Basin-wide interpretive program.

- **Use seawalls to interpret the filling of the marshes and the changing of land uses.** The western terminus of the Cambridge seawall at MIT would be a good site for interpretation. The filling of the Back Bay can be interpreted from the vantage point of the pedestrian bridges crossing Storrow Drive.

- **Interpret the oldest seawall in the Basin, along the east side of the Broad Canal, for pedestrians and recreational boaters.**

- **Interpret the dam complex.** The dam complex provides a superb opportunity to interpret several themes. The complex of buildings at the dam might effectively support certain types of programs. MDC park rangers might be stationed in the lower lock keeper's structure; exhibits on the creation of the Basin and the operation of the dam might also be installed here.

- **Where a pedestrian pathway links The Fens to the river, use the gatehouse at Charlesgate to interpret the tributaries leading to the Basin, including Stonybrook and the Muddy River.**

THE MEMORIAL TO THE FOUNDERS OF WATERTOWN, SHOWN IN A 1936 PHOTO.

- **Provide materials that interpret all Basin monuments.**

- **Use the historic shade structures in the Lower Basin to interpret how park activities have changed.** A shade structure near Community Boating could become an armature for an exhibit on sailing history in the Basin.

- **Encourage a broader array of public programs at the Herter Center, including interpretation of the Charles River Basin.**

- **Interpret the historic parkways for users who visit during weekend parkway closures.**

- **Use the bridges to interpret the history of transportation and land use in the Basin.**

- **Interpret the history of Magazine Beach.** Create interpretive elements at the overlook to describe the powder magazine, the filling of the marshes, river swimming, crew races, and other themes.

- **Interpret the history of Riverside Press on the north bank between the River Street and Western Avenue bridges.**

- **Establish the marsh in Hell's Half Acre, between Eliot and Arsenal Street bridges, as a laboratory for environmental education.**

- **Establish interpretive elements for the Watertown Arsenal at a reconfigured outlook at the Greenough Boulevard seawall.**

THE RIVER

The Charles River is a wildlife habitat, a watercourse devoted to many uses, and a scenic resource. It is a resource whose ecological, recreational, and scenic values are not necessarily in conflict.

Today numerous issues confront the Charles River—water quality, navigability, capacity, conflicting uses, boat and pedestrian access, safety, and visual character.

Existing Conditions and Issues

Water Quality and Swimming

A partnership of Massachusetts Water Resources Authority (MWRA), the Environmental Protection Agency (EPA), the Massachusetts Department of Environmental Protection, the Charles River Watershed Association, the MDC, and cities and towns within the watershed has improved the water quality of the Charles dramatically in recent years. The requirement to provide best management practices for stormwater discharges has had a significant impact. Concerned groups are campaigning to make the Charles River safe for fishing, boating, and swimming by Earth Day 2005. Charles River Watershed Association volunteers, with funds from the MDC and EPA, test water quality on a daily basis at nine boating facilities in the Basin and fly color-coded flags to alert boaters to water conditions.

During the summer of 1998, the Charles River Basin was generally suitable for boating 83% of the time, a substantial increase over 1996, when it was deemed suitable for only 57% of the season. In wet weather, when combined sewers flush into the river, conditions were acceptable for boaters 72% of the time, a huge improvement over 45% of the summer of 1996.

This Master Plan does not focus specifically on water quality, a topic that has been addressed in numerous other studies. The plan does, however, examine the opportunities afforded by cleaner water.

Swimming in the lower Charles will continue to be problematic because of the many issues of public swimming beaches. Public swimming can only be allowed in publicly designated areas where lifeguards can be posted to protect public safety. If the history of freshwater beaches on the Charles is any indication, a public beach in the Basin would experience extremely heavy use. To create a public beach would require armoring the shoreline or creating a large sandy area to prevent shoreline erosion; heavy use would soak, trample, and destroy any turf in the area. The necessary facilities (parking lots, bathrooms, showers, and changing rooms) would encroach on limited parklands.

The river's natural turbidity is the most serious constraint on future swimming; lifeguards must be able to see swimmers who fall beneath the water's surface. A body of water is determined safe for swimming if a Secchi disk divided into alternating black-and-white quarters can be seen when it is lowered four feet into the water. The Charles, naturally murky due to tannins and silt, may never achieve this legal level of visibility no matter how clean the water. Silt fences and other forms of filtering technology might improve visibility by removing particulates. These are artificial, expensive, and require constant upkeep. Another way to improve visibility is to install a white sand bottom, though the current would wash the sand away regularly. A pea-gravel beach, a sturdier alternative, would also require regular, if less frequent, replenishment.

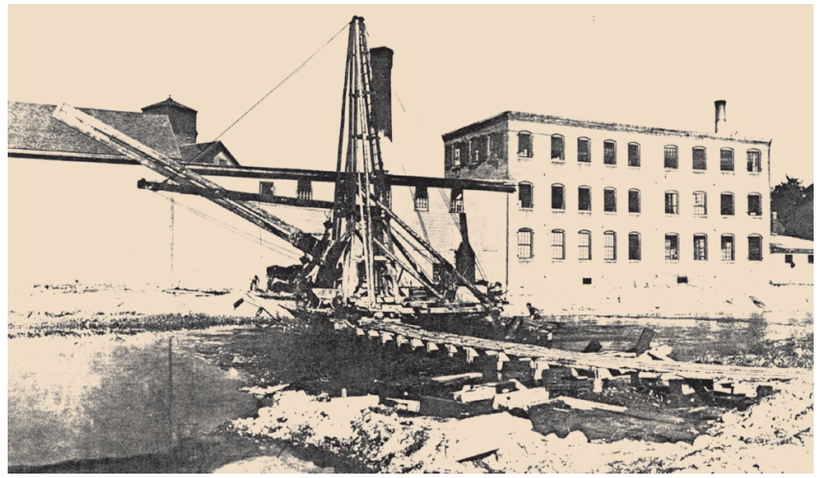
The existing sediments on the bottom of the river also pose problems. In many places they are likely to be contaminated. Hazardous materials would have to be dredged and replaced with clean fill. The costs of dredging and disposal of the dredged spoils are substantial.

There is strong potential for conflicts between boaters and swimmers. Preventing such conflicts would require a portion of the channel to be marked off with floats and swimming beaches be closely monitored during hours of operation. There are few places where the river is wide enough to accommodate both boat traffic and swimming.

It may be possible in one or two locations along the Basin to build swimming lagoons with filtered or recirculated river water. This approach, while expensive, could overcome some of the potential conflicts outlined above. Although there are few places along the river that could readily accommodate a lagoon, creation of one as a replacement for the existing pool complex should be considered at Magazine Beach. Herter Park is another site with sufficient room for a swimming lagoon.

Navigation

The ability of boats to navigate the Charles upstream of the North Beacon Street Bridge has become an issue requiring immediate attention. Historically the channel of the entire Basin was dredged to a minimum depth of eight feet.



DREDGING THE RIVERBED IN WATERTOWN IN 1910.

Over the past thirty years silt has reduced the depth of portions of the Upper Basin to two feet or less. Three boating clubs already experience limited access due to silting and aquatic weeds in the Upper Basin.

The precise origin of this silt is not known, though only three sources are possible—waterborne matter from upstream, bank erosion, and solids from combined sewer outfalls, storm drains, and Massachusetts Turnpike and other roadway drainage. If it continues, this buildup

of silt may make the Charles impassable above the North Beacon Street Bridge to boats drawing more than a foot of water. The Watertown and Newton Yacht Clubs and the public launch ramp at Daly Field could all become unusable within five to ten years if nothing is done to find and block the source of the silt and to remove the deposits that have accumulated. Disposing of these sediments will be extremely costly, as they are likely to be heavily contaminated.

Water chestnut, a nonnative invasive plant, has become another major navigational issue affecting the Upper Basin, particularly the members of Community Rowing. Rowers can float a scull in a few inches of water, but the aquatic plants that thrive in shallow water tangle their oars. The MDC has begun an effort to harvest this invasive plant, although it may take several years for the harvesting program to succeed fully. Large portions of the water surface above the North Beacon Street Bridge contain the water chestnut; it is beginning to spread downstream. The plants have been spotted as far downstream as the Cambridge Boat Club, just below the Eliot Bridge. Shallow water encourages the growth of plants; dredging would help prevent their spread.

COLONIES OF WATER CHESTNUT HAVE TAKEN HOLD IN THE UPPER BASIN. IN THIS VIEW THEY APPEAR AS LARGE ISLANDS OF GREEN ALONG THE BANKS OF THE RIVER EAST OF WATERTOWN SQUARE. DALY FIELD AND NONANTUM ROAD ARE VISIBLE IN THE LOWER LEFT.

The already narrow upper stretches of the river are further limited by navigation hazards, most notably fallen trees and sandbars in front of some combined sewer outfalls. The only sandbar that has become a serious obstruction to traffic at this time is at Boston Water and Sewer Commission Outfall 032 above the Arsenal Street Bridge.

The clearances of most bridges over the Charles place limits on boating. Existing bridges are a major improvement over the pile bridges that once complicated navigation on the river, though their narrow arches and—in some cases—skewed orientation to the channel restrict traffic and sight lines. A powerboat cannot pass an eight-man shell in the arches of many of the bridges; vessels must take turns. Navigation lights require regular maintenance and prompt replacement.

Capacity

According to the National Water Safety Congress, carrying capacity is the ability of a body of water to provide safe and satisfactory experiences for variety of users over time without degradation of the resource. Boating traffic also has an impact on the experience of parkland users. A single person traveling too fast in a large boat has a much greater impact on the experience of both water and parkland users than a group of canoeists. Given the large number of existing and potential users the Basin watercourse is best adapted and uniquely suited to nonmotorized boating. Many more canoes, shells, and sail boats can be accommodated safely than can powerboats.

CANOE RENTAL AT HERTER PARK.

Boating on the Charles is a weekly, sometimes even daily, pleasure for hundreds of people. Boats enliven the water park and provide enjoyment to thousands more who watch from the banks or from their cars. Crew races have taken place on the Charles for more than a century and a half, canoeing for more than a century, and sailing for more than fifty years.

There are no accurate measurements of actual river use, nor is there a clear method for determining if the Charles is at or approaching its carrying capacity. Growing demand is threat-

ening the Charles River as a special resource for recreational boating. Maintaining safe and supportable levels of use has become a crucial issue. There is a consensus among the diverse boating communities that the river functions well most of the time but that it may be at or over capacity during certain periods, such as summer weekends.

SPEED BOAT AND SCULL NEAR HERTER PARK.

User Conflicts

Despite an already high level of public use, some proponents maintain that there is potential for public boating programs to grow in the Basin. Given the large numbers of users, there is less conflict on the water than one might expect, due to complementary patterns of use. Rowers are more prevalent in spring and fall and on early weekday mornings, early weekday afternoons, and Saturday mornings. Sailors are inclined to use the river most heavily in summer and fall; in the spring they tend to sail between 3:00 p.m. and sunset and in summer and fall between 10:00 a.m. and 3:00 p.m., hours when rowers are generally not on the water. Sailors use the river on weekends as much as, if not more than, on weekdays in all seasons. Power boaters tend to be on the water during a shorter season, from the beginning of May through October, and for a more concentrated time—generally on weekends and after 5:00 p.m. on summer weekdays.

Conflicts do arise. Sunny evenings in late spring and early fall and weekends after 10:00 a.m. from late spring through early fall are especially busy. Powerboat traffic becomes so heavy during these periods that rowers, sailors, canoeists, and kayakers find it difficult to use the river safely. Use conflicts are also common in specific places—the Lower Basin between the Longfellow and Harvard bridges, the BU Bridge, the Eliot Bridge, the Arsenal Street Bridge, and the North Beacon Street Bridge. Some of the current conflicts result from lack of cooperation within the boating community, lack of education about the needs of different users, and the absence of aggressive enforcement of boating rules. (See the discussion of etiquette, enforcement, and safety on the next page.)

Access to the River

In order to be successful, the river must be accessible to the public in a variety of ways. Access to boating opportunities for boat owners, for those who rent boats, for club members, and for tour boat passengers must all be preserved and enhanced.

River access is also an issue to non-boating users. With the exception of a few of the public landings, people who want to be closer to the water have no easy means of doing so. A majority of the respondents to the user survey cited lack of access to the water from the banks as a major problem. There are few places along this stretch of the Charles where people can get out onto the river from the banks or rest comfortably at the water's edge. In some sections seawalls keep users high above the waterline. In others, especially above the Arsenal Street Bridge, the banks are too steep and overgrown to allow easy access to the water's edge.

In addition, there is currently no permanent facility for public access rowing on the Charles. Community Rowing, Inc. (CRI), one of the largest public-access rowing programs in the country, has no permanent home; its almost twelve hundred members, along with more than four hundred athletes from twelve college and institutional programs hosted by CRI, row out of the Daly Rink.

The Daly Rink is large enough to shelter CRI's boats and programs, but it has several serious drawbacks. The rink's skating program takes precedence over Community Rowing activities. This subjects CRI to disruptive maintenance procedures during its peak-use periods. Because CRI cannot use the rink until skating season is over, it begins at least a month later than other rowing programs; the shortest season of any rowing organization on the Charles. CRI

must store its boats elsewhere during the winter. This is an expensive process and causes considerable wear and tear during transport and off-site storage. Because there is insufficient space within the rink, some of CRI's equipment, such as the engines for the coaching launches, is stored in large shipping containers on the river bank. These are an eyesore and vulnerable to theft.

Row As One—which works to make rowing accessible to women and girls of all backgrounds and income levels—shares the limited storage and dock space at Daly Rink with Community Rowing. Should Row As One expand significantly beyond its current level, it will outgrow this space and require a location easily accessible to its low-income youth population.

There is also need within the Basin for launch space and for parking for cartopped boats. Of the nine public landings along the Charles, only two—at Watertown Square and at Cambridge Parkway—have parking nearby. The parking spaces along Cambridge Parkway are of limited availability for people coming to use the Basin.

Because it competes for space with the public fleet, private boat storage at public facilities should be limited, made available only to those who have no other option and who are chosen each year by lottery. There is no storage available for privately owned small boats such as canoes or kayaks and very little storage available for privately owned rowing shells.

Within the Basin only Daly Field offers a public-access boat ramp for powerboats and space for trailer parking. For some people launching here, the Charles is either their destination or an integral part of a leisurely trip to the harbor. For many others the long trip down the Charles, which takes forty-five minutes at the posted speed limit, is an inconvenience.

COMMUNITY ROWING, INC., USES THE DALY RINK TO STORE SHELLS.

This latter group tends to speed and ignore established traffic patterns, practices that can be dangerous to other boaters and disruptive to visitors on the park land.

There are no moorings or slips for transient boaters on the Charles. A limited number of visiting boat moorings should be created.

Etiquette, Enforcement, and Safety

The popularity of the Charles River Basin for boating activities and the potential for future growth in its use require that regulations affecting traffic patterns, rights-of-way, and other safety issues govern boating. Though the U.S. Coast Guard Inland Rules of the Road apply to most rivers, the status of the Basin as a water park has given the MDC the legal authority to develop supplemental rules and regulations governing this watercourse (350 CMR, 12.0 M.G.L. c92 section 38).

In the past these boating rules and regulations have been inadequately enforced. Some boaters have ignored them by speeding or cutting across traffic, and several dangerous collisions have occurred in recent years. The MDC Park Ranger Marine Unit now patrols regularly and has the power to issue citations.

Sailors, rowers, and power boaters need to recognize the limitations affecting each other and their movement on the water. Until the early 1990s the Charles River Boating Conference helped settle disputes between boating groups, work out traffic patterns, and address common issues, but since then users have lacked a forum to discuss these matters.

- **Maintain the no-swimming policy in the Basin for the foreseeable future.** The master planning process assessed the feasibility of swimming in the Basin by evaluating a number of potential sites:
  - ✶ *Upper Basin above Newton Yacht Club:* While this stretch of the river would be out of the main boating lanes, the water is quite shallow and would need to be dredged, and there is a strong likelihood of hazardous materials in the sediment. There is no room for parking nor is adequate public transportation access available.
  - ✶ *Magazine Beach:* The site of a historic beach, this location has a certain appeal. Parking is limited and public transportation access is poor. Magazine Beach is a heavily used stretch of the Charles, and its parkland is already carved up among different programmed uses. Adding a swimming beach would overburden the park with facilities. The crowds and traffic a beach would create will have an adverse impact on the adjacent neighborhood.
  - ✶ *Esplanade lagoons:* The lagoons are contained, almost entirely empty of boat traffic, and well served by public transportation. However, a swimming beach would be out of character with the formal setting of the Esplanade. A swimming area would add an unsupportable level of use to the severely crowded banks.

THE SPRAY POOL AT LEDERMAN FIELD IN CHARLESBANK PARK.

  - ✶ *Eastern end of Herter Park:* This area presents the most promising option for the creation of a new swimming beach, although it has serious drawbacks. Transit service is poor, but there is ample parking. Its location at the outside of a curve in the river would make it easier to rope off an area for swimming without disrupting boating traffic. This is the only large park within the Basin laid out with flexible fields. These fields receive heavy use for everything from pick-up volleyball to sunbathing to family picnics. Adding changing rooms and a beach would disrupt the layout of the park and require eliminating a major portion of the fields. Because the river is quite shallow here, creating a swimming area would require a major dredging project.

The problems associated with these sites compel the recommendation to continue the no-swimming policy in the Basin. The policy, however, should be interpreted to allow wading at one's own risk as water quality improves.

- **As existing swimming pools require removal or replacement, consider naturalized swimming lagoons as an alternative.** River-fed lagoons or recirculating lagoons should be more successfully integrated with the river setting than are the existing pools structures.

- **Support the goal of attaining a swimmable level of water quality by the year 2005.** Clean water will be major boon to boaters on the river as well as pedestrians along the shore. Novice sailors and rowers will no longer fear capsizing into polluted waters. Though swimming is not advised, pedestrians and dog walkers will be able to come to the water's edge and wade in some places without fear of polluted water.

- **Develop a maintenance program for clearing fallen trees, shopping carts, and other navigational hazards, including floating trash, from the Charles.** Seasonal sweeps of the Basin to remove hazards should be imple-

mented. Many "dolphins"—clustered pilings bound together at the top with cable, several of them along Lederman Field and near the Lechmere Canal—are now just navigational hazards. Their historical significance should first be assessed, and, if insignificant, they should be cut off at the mud line to avoid disturbing river sediments and removed. Some should be maintained as tie-offs. The maintenance program should also address such issues as replacing navigation and arch lighting on bridges.

A small boat should be employed to skim the line of garbage from the downwind side of the Lower Basin, working with ground crews to clear steep banks of trash. More frequent sweeping of parkway gutters would reduce the amount of trash and sand entering the river.

The MDC should coordinate a Basin-wide volunteer cleanup effort in the spring and fall. This would expand current programs and "servathons" and could be a regular Charles River event. To encourage citizen participation and raise public awareness, all local street drains emptying into the Charles should be identified with small signs (for example, "drains to Charles River").

- **Commission a dredging study to examine requirements necessary to maintain the navigability of the Charles between North Beacon Street and Galen Street.** The study should also assess the sandbar in front of BWSC Outfall 032, any bridge arches that have filled with sediment, and any other potential dredging needs in the Basin. This study should 1) investigate the source of new material and develop a detailed strategy for preventing such filling in the future, including the development and maintenance of catch basins at combined sewer outfalls and other potential sources of sediment; 2) analyze environmental hazards and permitting; 3) assess disposal sites for dredged material; 4) determine how far upstream dredging should proceed, either to the combined sewer outfall above Newton Yacht Club or all the way to Watertown Square; and 5) develop cost estimates and suggest potential sources of funding.

- **Continue to fund a maintenance program to prevent the waterway from being choked by water chestnut and other invasive species.** Over the last eight years the MDC has spent close to half a million dollars to control water chestnut in the Lakes District above the Moody Street Dam. The Watertown Yacht Club has already spent money to harvest the invasive plants. Other organizations have indicated their desire to work with the MDC on this issue.

TRASH ON THE SHORE OF THE RIVER NEAR THE NORTH BEACON STREET BRIDGE IN THE UPPER BASIN.

- **Establish a Charles River Basin hotline so problems can be reported easily and quickly.**

- **Provide adequate funding to maintain the new Charles River Dam—its sluice, lock culverts, engines, and other equipment—at optimum levels in order manage floods effectively and minimize water level fluctuation or, at a minimum, warn the boating community of water-level fluctuations.** In order to protect small craft in the locks, "slow—no wake" signs should be posted and enforced.

- **Maintain the river channel to improve navigation under the existing bridges.** Any future bridges should incorporate broad spans to accommodate safe navigation. Many of the bridges over the Charles are due for major restoration in the coming decades; others may be replaced entirely. Arches should be designed and the channel maintained to accommodate boating traffic safely.

- **Host a revitalized Charles River Boating Conference at the Metropolitan District Commission and encourage greater cooperation among user groups.**

- **Work with the Boating Conference to measure crowding and capacity.** A carefully constructed methodology for the collection and use of data should be developed. The most reasonable approach to monitoring capacity would be to pick several key points where conflicts occur and monitor them at peak-use times, such as from 3:00 p.m. to 8:00 p.m. on Fridays in the late spring and early fall. Volunteers from the Boating Conference should aid in this effort. The MDC Park Ranger Marine Unit should keep track of accidents on the Charles and their severity, and prepare an annual report.

- **Review and supplement MDC rules and regulations for the Basin to reflect its unique conditions and its crew and sailing race courses.** A reestablished Boating Conference, in cooperation with the MDC Park Ranger Marine Unit, must undertake this review and develop key regulations for specific sections of the Basin.

- **Preserve the quiet character of the Charles River by managing it primarily for non-motorized craft and by strictly enforcing powerboat speed limits.** New boating uses should be carefully screened to ensure their compatibility with the quiet character of the Charles, particularly in the riverine stretch above the Boston University Bridge. Vessels that are too large, generate excessive wakes, or travel at high speeds should be limited. The prohibition on jet skis, which cannot operate effectively at the posted speed limits, should continue. Though difficult to enforce, noise restrictions should be put in place and MDC rules and regulations should be posted at the Daly Ramp and enforced by the MDC Park Ranger Marine Unit.

THE SHALLOW UPPER BASIN, NEAR THE PERKINS SCHOOL IN WATERTOWN, IS IDEAL FOR ROWING.

- **Restrict the Esplanade lagoons, designed for canoeing, to hand-powered vessels only.**

- **Limit overuse of the river through strict controls on the construction of new facilities and on the expansion of existing ones.** Expansion should only be allowed if the facility requesting it can first, provide amenities for park users such as restrooms and drinking fountains, and second, demonstrate measurable increases in public access to the water—actions that would, for example, provide room for public high school, college, or public programs. Access to the Charles is a precious asset; those that have it must work together to provide access for those that do not.

Prohibit the building of new facilities until adequate enforcement of boating rules and regulations is in place. Given the narrowness of the banks along much of the river, it is vital to minimize the encroachment of new structures. New boathouses should not be built in areas where their presence will negatively affect river traffic patterns, such as near the Boston University or Eliot Bridges, on the inside edges of river bends, or between the Harvard and Longfellow Bridges in the Lower Basin.

The MDC should review all new construction to preserve the beauty of the Basin. Consideration should be given to the height, massing, and scale of proposed buildings, the materials and color of buildings and site features such as fencing, the impact of structures on viewsheds, landscaping, and the continuity of public access along the shore.

In certain circumstances existing boathouses should be allowed to relocate from pinch points such as the Boston University and Eliot bridges. The most obvious candidate is the Boston University Sailing Pavilion, whose location just downstream of the Boston University Bridge creates traffic problems on the banks as well as on the water. An alternative location between the current site and Charlesgate would give the sailboats ample room to maneuver while increasing safety on the public pathway.

The moratorium on yacht club expansion, in place since the 1960s, should be continued. Permitted to build from the 1940s through the 1960s, the yacht clubs have been good neighbors and advocates for the Basin. The Charles River Basin can certainly accommodate the limited number of private yachts currently berthed there. The river has, however, greater capacity for small, nonmotorized craft that can serve the recreational needs of more people.

One or possibly two new facilities to allow public access to the river may be appropriate; these sites are identified below. Only two of the nineteen facilities on the Charles are dedicated exclusively to public access; any new facilities should be reserved for public-access programs or for organizations with substantial public-access components.

- **Maintain existing public boat landings and provide up to five new public landings.** Recommended sites for new public landings are shown in the diagram on page 38. With the exception of a landing at Herter Park, no new public boat landings should be located upriver of the Anderson Bridge.

- **Require existing and proposed boat and yacht clubs to pay an annual rental fee based on the appraised value of their facility.** Seek legislation to allow use of these funds to increase maintenance and regulation enforcement in the water channel.

- **Limit tour boat operators based in the Basin to a finite fleet of vessels and to their current level of operation.** Tour boats are among the most effective ways to broaden public access to the Basin and are thus an essential piece of Charles River programming. However, their operations also periodically contribute to overuse of the river and to conflicts between user groups. The MDC should continue to limit amphibious tour boats to turning just upstream of the Longfellow Bridge and should limit their range during peak-use periods. Because of the narrowness of the channel above the Boston University Bridge, boat tours should be scheduled for times of day that minimize conflict with rowers and other boaters, and tour boat companies should be encouraged to use smaller vessels. Large tour boats should be permitted above Anderson Bridge only for special occasions and special tours.

TOUR BOATS PROVIDE RIVER ACCESS TO MORE THAN 300,000 VISITORS EACH YEAR.

Limits must be retained to mitigate the intense crowding between the Longfellow and Harvard bridges during both sailors' prime racing times and weekend rowing regattas. The MDC should work with the Boating Conference to evaluate any further expansion of these programs.

- **Allow the public rowing programs to build one new facility to serve the public.** The master planning team evaluated twelve sites within the Basin large enough to accommodate a new boating facility according to these criteria:
  - ✶ *Access to public transit*, because the boating community is increasingly interested in reaching out to low-income high school students and others who may not own cars.
  - ✶ *Availability of parking to serve boaters*, many of whom prefer to drive.
  - ✶ *Impacts on parkland* so as to minimize encroachment of new facilities.
  - ✶ *Benefits to park users*.
  - ✶ *Impacts on the water sheet traffic patterns*.

  The evaluation identified five sites where a new boathouse might be built:
  - ✶ *Daly Field*, by replacing or retrofitting the skating rink
  - ✶ *Near the Sherborn Street pedestrian bridge* across Storrow Drive, just upstream of the Harvard Bridge
  - ✶ At the *upstream terminus of the MIT seawall*
  - ✶ *On the Cambridge seawall* just below the Longfellow Bridge
  - ✶ *Between the Boston University and River Street bridges* if it ever becomes possible to shift the alignment of Storrow Drive away from the channel in this section

Daly Field appears to be the best of these locations for an expanded public rowing program because of ample parking, ample room for the facility (presuming the eventual removal of the skating rink), and an open Upper Basin for novice rowers. A facility here would continue to animate the Upper Basin and avoid added congestion downstream. It would also provide an opportunity to restore the bank behind the rink (see Appendix F).

- **Provide more launch sites for small, hand-carried boats.** Either shallow-water piers or beaches should be created close to small parking lots for small boats. Piers should be broad enough to serve fishermen or sunbathers in addition to boaters. Given the fluctuating water levels all docks should be equipped with ladders for small craft such as kayaks. Wherever possible, locate bathrooms near docks for boaters.

  The Master Plan has identified six potential launch sites that could be created by improving existing or developing new facilities:

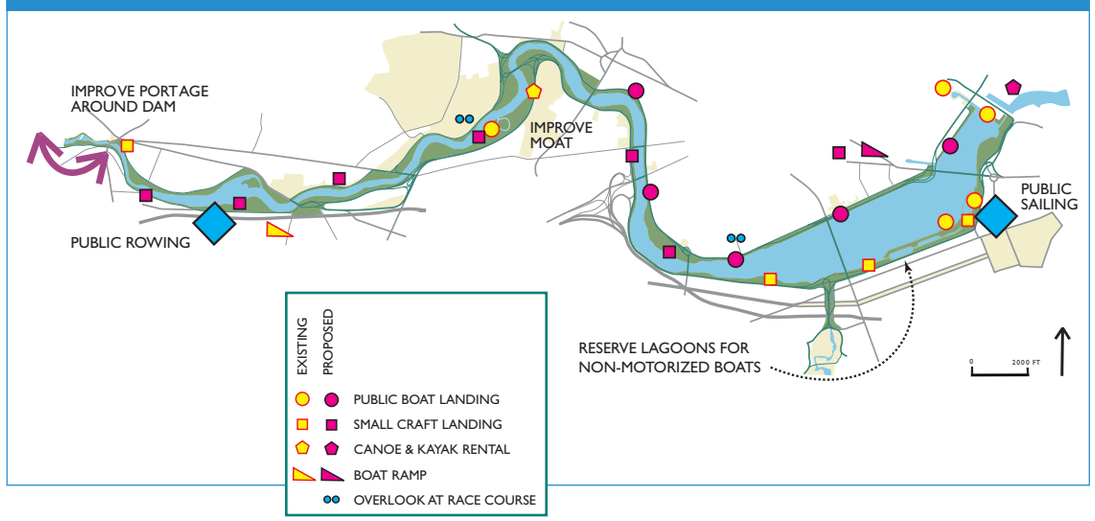
  - ✶ improve the *existing public landing at the Cambridge riverfront*, off Cambridge Parkway
  - ✶ add a small dock and launching beach at the *lower end of Magazine Beach* near the MWRA Cottage Farm facility
  - ✶ create new access at *the north end of the Genzyme Corporation riverfront*
  - ✶ create a launching beach and landing at *Herter Park East* in concert with Charles River Canoe and Kayak
  - ✶ repair the existing landing, currently hidden in trees, off *Greenough Boulevard*
  - ✶ build a landing near the open field by *Charles River Road just west of Perkins School*

- **Reduce use of Daly Field ramp by securing convenient options closer to Boston Harbor for boaters headed there.** The Schrafft's ramp in Charlestown and Rainbow Park in Dorchester should be publicized to reduce the number of boats headed for the harbor that now use the Daly Field ramp. Building a new launch ramp at the end of the Broad Canal in Cambridge would create an option closer to the harbor, reducing powerboat traffic on the Charles. Serious clearance issues would have to be overcome for this option, limiting its viability. The depth of the steel beams under the drawbridges that spans the canal limits clearance for small powerboats. A future opportunity exists to redesign the bridges to allow powerboats safe passage.

  Once alternatives are available, small signs should be installed at the Daly Field ramp to encourage the public to use other ramps. The amount of trailer parking available at Daly Field should also be reduced.

- **Limit the moorings in the Lower Basin to 70 (the current number), and provide a small number of additional guest moorings for visiting boaters.** The breadth of the Lower Basin below the Longfellow Bridge accommodates the current public moorings, but increasing boat traffic in the Lower Basin makes it necessary to limit the number of moorings to their existing number, plus two or three for visiting vessels. The Charles River Basin, with its views of downtown Boston, would undoubtedly become a

PUBLIC ACCESS TO WATER



THE METROPOLITAN PARK COMMISSION, FORERUNNER OF THE MDC, MAINTAINED A POLICE FLOTILLA BEGINNING AT THE TURN OF THE CENTURY.

popular layover mooring. An MDC Park Ranger Marine Unit housed at the MDC Boathouse should manage these guest moorings, and mooring fees should help to fund this unit.

- **Expand public access to the water and publicize public-access programs**. The MDC should work with the boating community and the Boating Conference to promote the river as a recreational resource. Renewals of leases for private clubs should be contingent upon more aggressive promotion of existing public-access programs along the Basin and in public schools. An annual report on public access progress should be produced by the Boating Conference.

  Given the success of Charles River Canoe and Kayak at Herter Park, demand may develop for another rental program in the Upper Basin. Daly Field is one possible site for a new program restricted to the upstream stretches. The shallow water here is ideal for novice canoeists, and the site offers good views at the Watertown Dam. To provide public access to the historic canoeway, Community Boating might be allowed to rent a limited number of canoes or other hand-powered boats to the general public. A rental facility at the future North Point Park would be sufficient to meet demand for renting boats in the New Basin as well as the Lower Basin.

- **Create more opportunities for Basin users to get down to the shore and have close contact with the water.** More wooden landings should be established at the shore's edge for sunbathing, picnicking, fishing, and dangling one's feet in the water. Shallow draft boats should be allowed to use these landings. Steps down to the shore and large flat stones to perch on at the water's edge should be provided at key intervals.

- **Educate the boating public about the rules of the road.** Several potential avenues exist for educating boaters about the rules of the water. The Boating Conference should work with the MDC Park Ranger Marine Unit to prepare a handbook or pamphlet explaining the rules and the needs of each type of user, distribute it to all registered boaters, post it in boathouses and yacht clubs, and include it on the MDC's Web site. Speed limits should be posted more prominently on the bridges. Finally, signs explaining appropriate passing techniques and etiquette should be posted at Daly Field and other launching points, in the locks, and on several of the bridges.

- **Actively police the river for violations of applicable boating regulations.** The MDC Park Ranger Marine Unit should have a strong presence on the Basin. Its efforts to enforce boating rules and regulations aggressively should be supported. Encourage members of the boating community to use a hot line or marine radio to report boats that violate rules and endanger others.

- **Provide safety equipment in areas of high risk.** The now-missing seawall ladders should be replaced at regular intervals along the Lower Basin, and all landings should be equipped with ladders and grab bars.

RIVERBANKS AND RIVER SCENERY

The riverbank is one of the Basin's most visible and important landscape zones. Water-loving plants lining the edge of the river help to stabilize steep banks and provide limited cover for birds feeding along the river. Boaters in the upper reaches of the Basin are completely surrounded by bank vegetation that screens the parkways from view and creates the illusion of a more natural setting. At the same time, volunteer growth of high shrubs deprives the parkway and path users of any views of the water. This was not always the case.

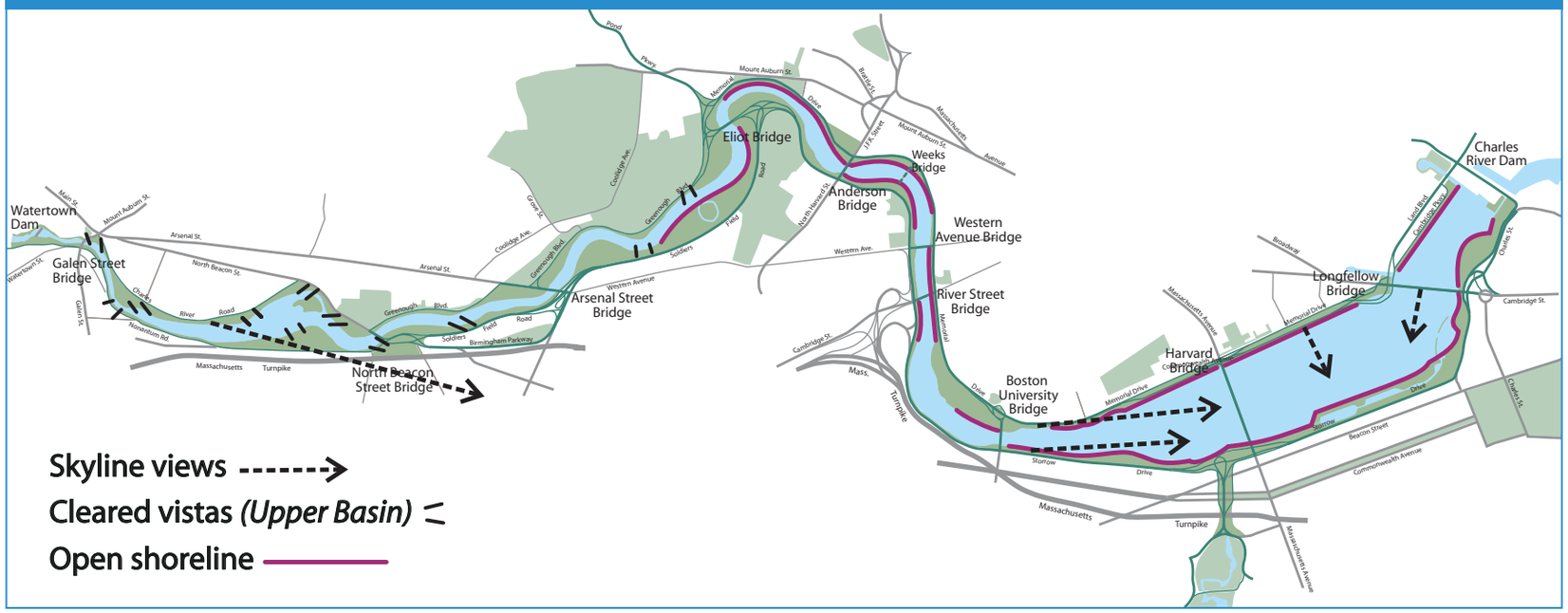
While the riverbank appears natural in many locations, there is not a linear foot of bank within the Charles River Basin that was not actively shaped. Most of the shore is armored with stone, much of which has fallen down over time. Indeed, early photographs indicate that the clear intent of park planners was to create an open river edge lined with parkway trees. The Basin's first planners and managers sought to create an expansive pastoral landscape with open views to the river as a contrast to the crowded conditions of city life.

Reductions in park maintenance over time and invading plant species have resulted in the filling in of most of the riverbank with vegetation. Where the embankment slopes are gentle and accessible by mowing machines, it is possible to maintain turf to the water's edge. In areas where the slopes are steeper than 1:4 or 1:5, maintenance crews must clear-cut vegetation to open views to the water along key stretches in the spring and again in the fall. This practice, effective for a short time, is not sustainable. Since the cutting does not disturb root systems, vegetation regrows vigorously and soon blocks the view again with thicker growth. A tendency of maintenance crews to run their mowers along the crest of the slope produces a linear, almost mechanical appearance along much of the Charles.

A direct result of these management practices is a river edge that is either entirely open or completely blocked by vegetation. An intermediate condition—where edge treatments vary so that water views are filtered or framed by vegetation—would be far more interesting. This requires a more directed approach to maintenance and intensive horticultural training for maintenance staff.

In most instances, opening scenic views to the water and keeping them open will require a full reconstruction of embankments to remove invasive species down to their roots. Armoring by itself cannot prevent the return of invasive plants. More manageable plant varieties, including natives and nonnatives, will need to be planted and carefully cultivated in the joints of riprap slopes. Horticultural training will be critical to the success of this approach (see *Appendix F—Riverbank Establishment & Maintenance.*)

RIVERBANK: SCENIC VISTAS



Recommendations for River Banks

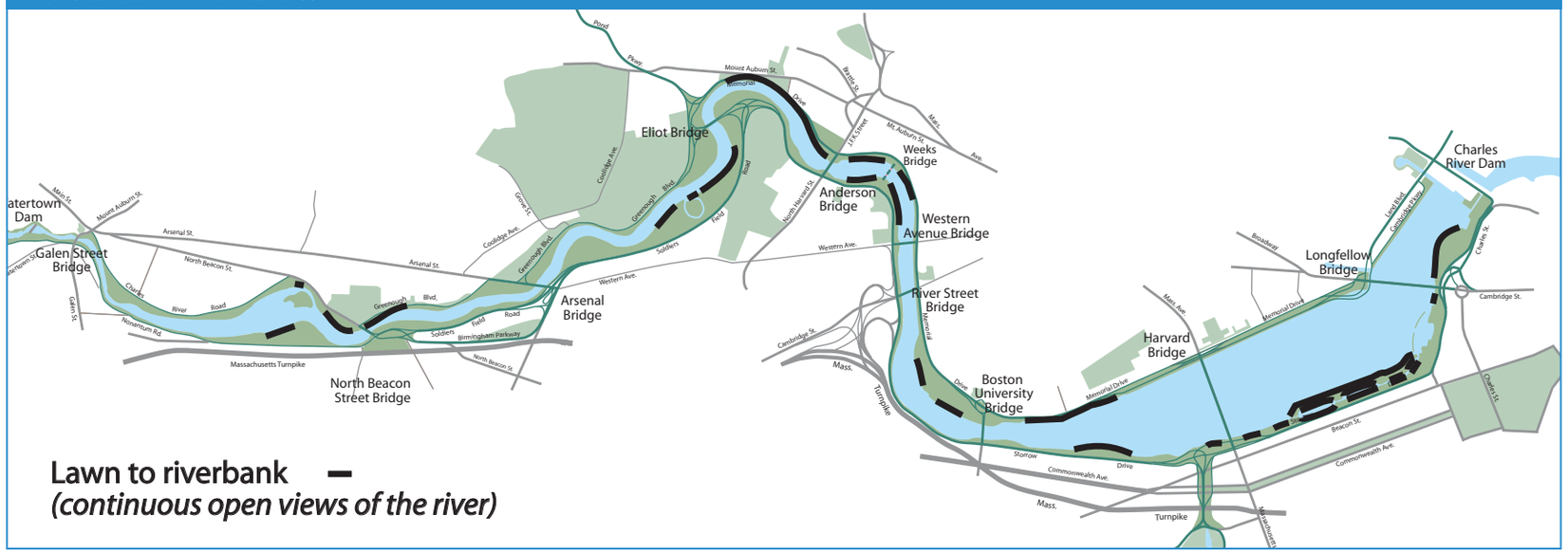
- **Create river views.** The 1996 Rivers Protection Act authorizes the identification and creation of scenic overlooks. Numerous areas along the banks of the Charles should be opened up for views (see plan diagram, above).

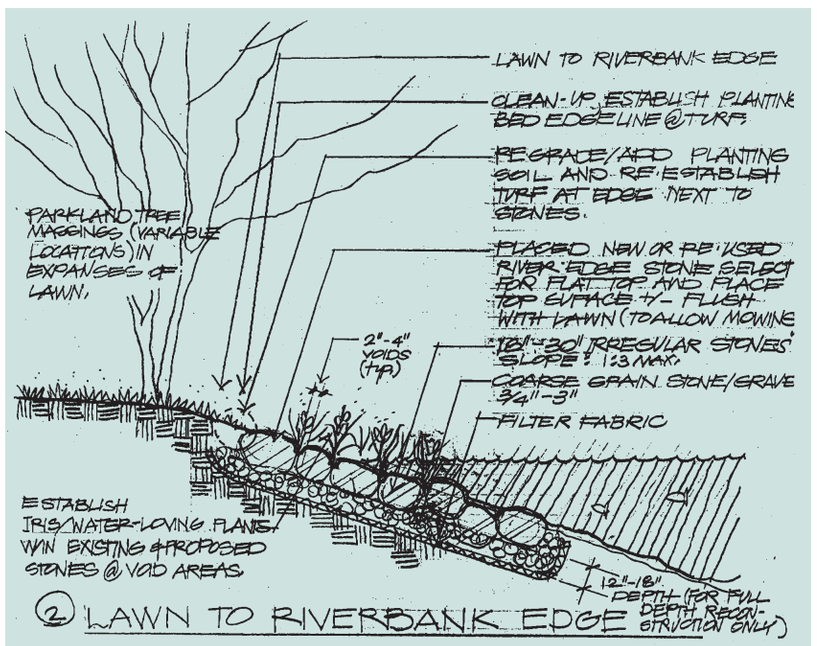
- **Identify and protect key scenic vistas by managing vegetation and controlling development.** The most scenic views are at bridges or bends in the channel.

- **Establish sustainable riverbank treatments.** Plans for bank treatment should be modulated to respond to the need for views, physical access to the water, bank stabilization, wildlife habitats, visual interest, and screening of parkways for water users. Vegetation should weave in and out from the river's edge, creating a less urban and more varied interrelationship between park and water.

  Implement and test recommendations with a demonstration project in a selected area of riverbank, using the recommended plant list in Appendix E. (See "Appendix F—Riverbank Establishment and Maintenance.") Specific conditions suggest implementing one of five recommended bank treatments, which are described on the next five pages.

RIVERBANK: LAWNS





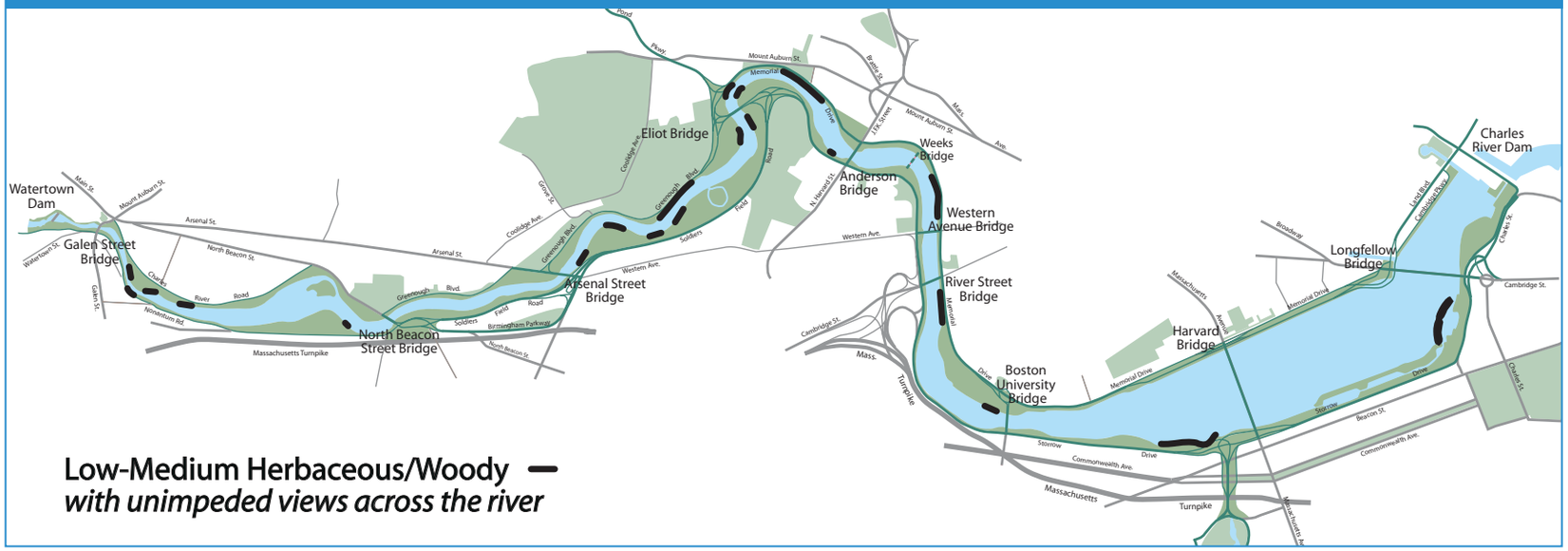
✶ LAWN TO THE RIVERBANK: This treatment achieves an open, expansive view toward the river and open access to the bank where river activities draw heavy spectator traffic. It also allows for small boat landings. Riprap needs to be stabilized to support this condition, the least stable of the riverbank treatments. This edge should be embellished with periodic groupings of understory and canopy trees. Such a treatment is recommended for approximately 4.0 miles that include these areas along the north bank:

> MIT seawall to Boston University Boathouse,
> stretches of Magazine Beach,
> banks east and west of Weeks Footbridge,
> banks east and west of Anderson Bridge,
> dock area at Greenough Boulevard,
> Squibnocket Park;

and these areas along the south bank:

> Lederman Field to Longfellow Bridge,
> Esplanade lagoon banks and island banks,
> a stretch west of Harvard Bridge,
> a stretch at Boston University riverfront,
> banks east and west of Weeks Footbridge,
> stretches of Herter Park,
> Daly Field.

RIVERBANK: WOODY UNDERSTORY

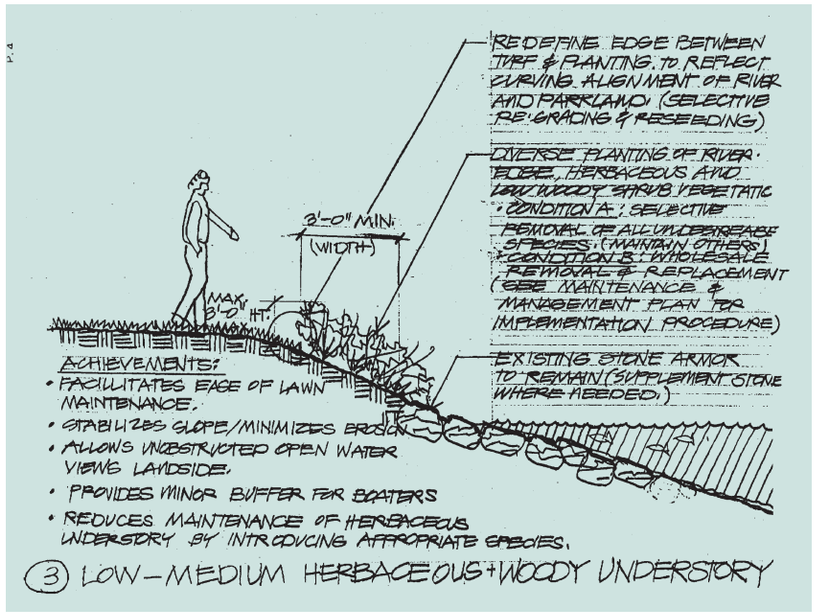


✶ LOW TO MEDIUM HERBACEOUS AND WOODY UNDERSTORY: This treatment achieves unobstructed water views along most of its length, with a planted zone three feet deep between the parkland and the river that will prevent movement to the edge of the bank. The majority of plant material in this zone is a maximum of three feet high, with periodic higher vegetation up to four feet that overhangs the water and provides shade for fish. This treatment stabilizes the bank and replaces grass with other species in areas that are hard to mow. It is suggested for approximately 2.13 miles, including these areas along the north bank:

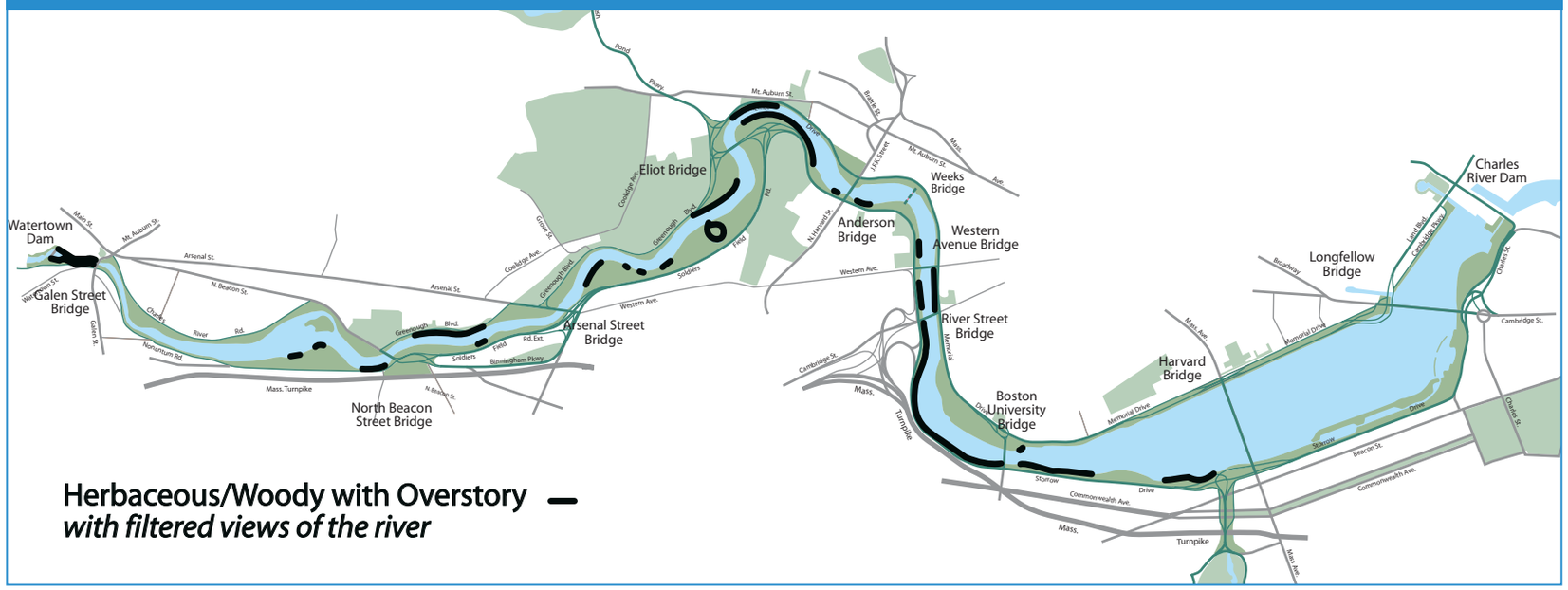
> stretches between Boston University and River Street Bridges,
> stretches between Western Avenue Bridge and Weeks Footbridge,
> stretch near Longfellow Park,
> stretch near Eliot Bridge,
> stretch of Greenough Boulevard,
> small stretches along Charles River Road, and
> near Galen Street Bridge;

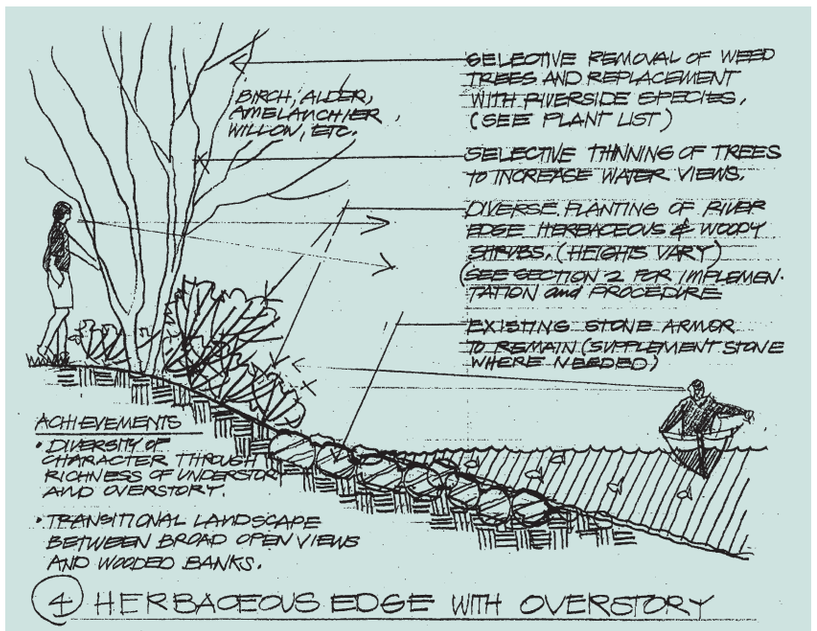
and these areas along the south bank:

> the islands by Community Boating (low, with habitat-rich vegetation),
> stretch west of Esplanade,
> small stretches between the Anderson and Eliot Bridges,
> stretches of Herter Park, and
> small stretch on Nonantum Road.



RIVERBANK: EDGE WITH OVERSTORY





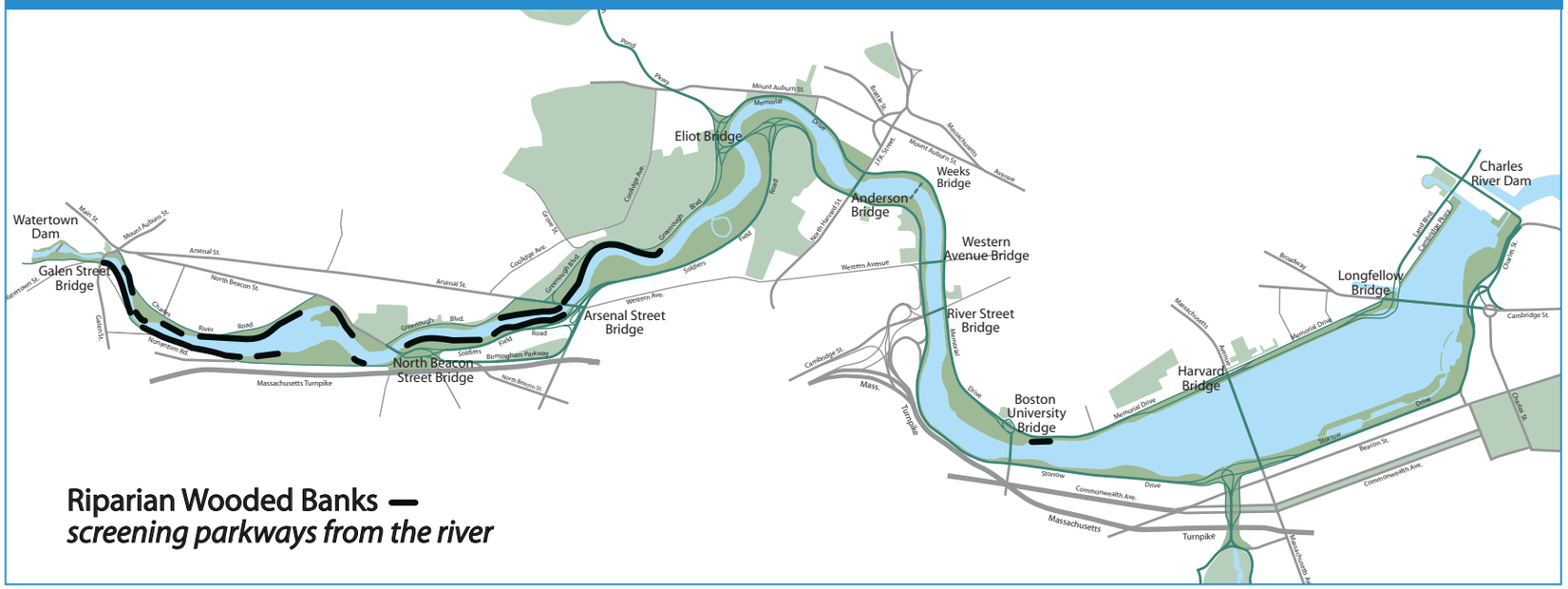
✶ HERBACEOUS EDGE WITH OVERSTORY: The greater richness of edge vegetation in this treatment imparts a diverse character to the bank. It serves as a transitional landscape between broad open views of the river and wooded banks. This treatment is recommended for approximately 4.0 miles at these areas along the north bank:

- > between River Street and Western Avenue bridges,
- > stretch east of Eliot Bridge,
- > by Hell's Half Acre,
- > stretch of Greenough Boulevard,
- > between Watertown Square and Watertown Dam;

and along the south bank:

- > stretches between Harvard and Boston University bridges,
- > between Boston University and River Street bridges,
- > stretch between River Street and Western Avenue bridges,
- > stretches between Western Avenue and Anderson bridges,
- > stretches between Anderson and Eliot bridges,
- > stretches of Herter Park,
- > stretch along commercial strip,
- > stretches of Nonantum Road,
- > between Watertown Square and Watertown Dam.

RIVERBANK: RIPARIAN WOODS



✶ RIPARIAN WOODED BANKS: This treatment, mostly found in the western Watertown and Newton zones of the Basin, provides the most positive and protected experience for water users. Selective thinning and clearing should be carried out to open up periodic views into the river from the parkland. This treatment is recommended for approximately 3.13 miles at these areas along the north bank

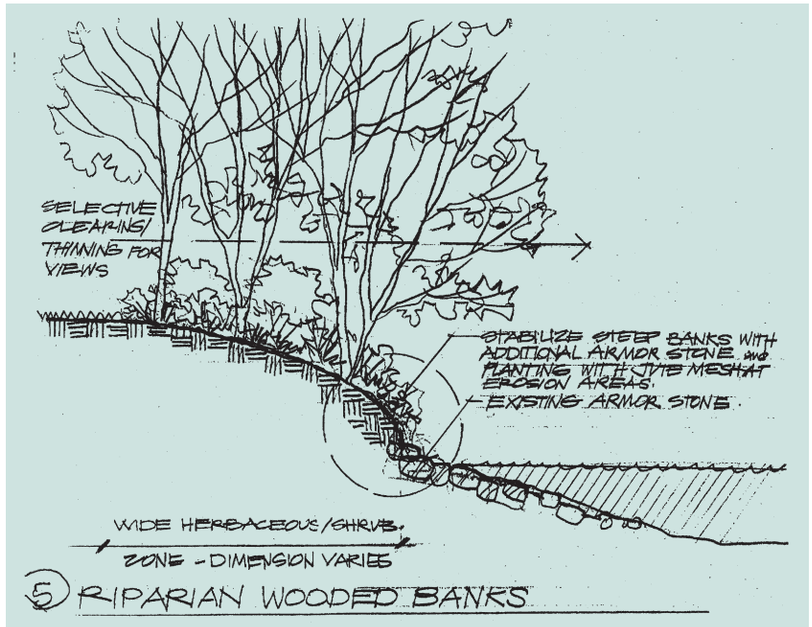
> stretch east of Boston University Bridge,
> stretches of Greenough Boulevard,
> stretch of North Beacon Street,
> stretches of Charles River Road;

and in these areas along the south bank:

> most of commercial strip
> stretches of Nonantum Road

✶ GRAVEL SHORE AT RIVER'S EDGE (*no section sketch shown*): This treatment varies the more typical treatment of lawn up to the edge of the bank and allows for future possible wading in the river. It is proposed in areas where there is already a gentle slope to the river and a bed of gravel at the water's edge. This treatment currently exists at Magazine Beach and in front of Boston University and should be retained there.

- **Manage the cutting and maintenance of the bank edge.** Creating a flowing pattern through the cutting and maintenance of the bank edge will impart a less linear, more dynamic profile to riverfront vegetation in less formal stretches.



- **Increase wetland habitat and wildlife support.** Restore and increase marsh environments along the shore and at Hell's Half Acre. Increase meadow habitats in the Upper Basin and enhance woodlands by controlling invasive exotics.

RIVER STRUCTURES

Within the Charles River Basin a set of structures—seawalls, canals, dams, and landings—regulates the channel and the flow of water.

The highly visible granite seawalls, all built between the mid-nineteenth century and the completion of the historic Charles River Dam, play an important role in defining the historic character of the Basin. They arose from the interest in reclaiming the polluted mud flats of the estuary for development.

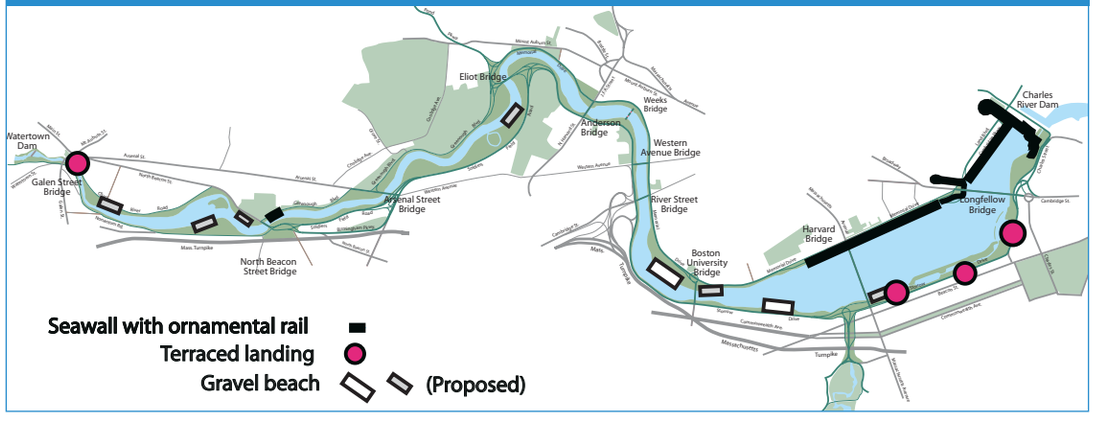
CLAM DIGGERS ON THE MUDFLATS AT LOW TIDE PRIOR TO THE COMPLETION OF A TEMPORARY DAM IN 1908.

The seawall along the Boston shore of the Lower Basin, built when the Back Bay was filled, is still visible along Storrow Drive. An integral part of the old dam, seawalls exist along the Charlesbank. They also line the Cambridge side of the Basin between the Charles River Dam and the Boston University Bridge. Short segments are found between the River Street Bridge and the Western Avenue Bridge and at the Arsenal dock site in Watertown. In many cases the seawalls carry decorative cast iron railings.

Parts of the nineteenth-century canals also survive. Broad Canal, built in 1805, was largely filled during the twentieth century; the seawall along the north shore of the river is one of its last vestiges. Lechmere Canal, built in 1874, was transformed in the 1980s into a water park and focal point for commercial and residential development. The head and north side of Broad Canal will be developed similarly in the near future.

The historic Charles River Dam complex includes key engineering elements—the dam itself, its locks, and the drawbridge. Guy Lowell designed its chief architectural components—the upper and lower lock gate houses on the Boston side, the Washburn Pavilion, and the MDC stables and boat house on the Cambridge side.

SEAWALLS



Four terraced boat landings were completed in 1935–37. These handsome granite structures served both as formal overlooks and boat landings. Three of the landings are located along the Esplanade at Gloucester Street, Dartmouth Street and Commissioners Landing. The fourth landing links Watertown Square to the river.

Existing Condition and Issues

Because of their solid construction and deep footings the seawalls remain in good condition, but the ornamental rails that line their tops are failing. After a century of use many have rusted; the MDC is replacing these railings incrementally at great cost.

The Museum of Science and its parking garage gradually covered much of the dam between the 1950s and 1970s. A second lock intended for small craft is entirely hidden underneath the garage. Some of the most handsome stonework in the Basin is now visible only from inside the

parking garage. Of the five historic dam structures, the boathouse is in the worst condition, with structural damage evident on its façade. The stables and the Washburn Pavilion have recently been renovated; the Massachusetts State Police currently use the lower lock gate house and yard, which are inaccessible to the public.

Most of the historic steps and landings along the shore are in need of stabilization and repair. At Commissioners Landing the stone steps are collapsing. At the Gloucester Street Overlook,

THE BOSTON EMBANKMENT WAS COMPLETED IN 1910. THE GRANITE STEPS (LOWER LEFT IN PHOTO) LEAD UP TO THE LONGFELLOW BRIDGE.

a massive panel of granite has fallen and broken into pieces; another on the opposite wall threatens to do the same. The remaining panel needs to be removed before it falls. Design plans are under way for this repair work.

Recommendations for River Structures

- **Conduct a visual conditions survey of all seawalls above and below water.**

- **Develop and follow a maintenance plan for the seawalls.** The maintenance plan should include removal of any trees or shrubs growing out of the stone work and stabilization of loose railings. Given the high visibility and the high cost of railings, it is recommended that individuals and businesses be asked to donate segments as part of a comprehensive effort to secure private funds for restoration needs.

- **Preserve and provide access to the oldest seawall in the Basin, along the east side of the Broad Canal in Cambridge.** Preserving this segment of the old canal and providing access to it by land and water may require reconstruction of the drawbridges for improved clearance. However, portions of the drawbridges—the counterweights and control house—should be preserved and interpreted if possible.

- **Make preservation, interpretation, and public access to the historic buildings and grounds of the historic Charles River Dam a priority.** This is the focal point of the Charles River Basin Historic District. Create a pathway along the upstream side of the dam; several alternatives for this pathway have been studied and are presented in Segment 1E, Project Areas. The historic buildings and grounds are to be studied under a separate MDC contract. Historic structures reports should be prepared for each of the five buildings as a basis for renovation and reuse, and a cultural landscape report should be prepared for the grounds. The MDC boathouse at this location should be stabilized immediately. The MDC Park Ranger Marine Unit should operate out of the boathouse.

- **Develop a stabilization and maintenance plan for all historic landings in the Basin.** Historic Structures reports should be prepared for all landings, and standard maintenance procedures should be developed. Historic stone work throughout the Basin should be field-checked periodically. Unstable sections should be stabilized immediately. If stabilization is impossible at the time, historic elements such as stone balustrades that are in danger of falling or breaking should be removed, labeled, and stored in a secure place until a careful reconstruction can take place.

- **Stabilize the granite steps and landings along the Esplanade.** It would cost far less to stabilize these stone structures now than to reproduce missing or broken pieces later. The Galen Street Bridge, where stone balusters

had to be reproduced at considerable cost, is a case in point. In many cases repointing the stone work in place may be all that is needed to preserve these durable and handsome structures. The stone steps at Commissioners Landing should be completely rebuilt on a new foundation if necessary. Design plans are underway for some of this repair work. Additional funding to complete the design and construction will be necessary.

COMMISSIONERS LANDING, EAST OF THE HATCH SHELL AND THE UNION BOAT CLUB, IS RECOMMENDED FOR RESTORATION.

PARKLANDS

This Master Plan aims to strengthen certain historic features of certain parklands within the Basin—for example, to heighten the character of the Esplanade as a quiet, passive-use area. It also advocates planning creatively—through grading, planting design, redesign of parking lots, or the addition of structural elements such as entrance gateways—those areas where the parklands widen.

These larger spaces offer an opportunity to claim passive areas within an otherwise extremely active Basin. In the parks within the Basin, landscape treatment should be tailored to the existing and proposed facilities and to the design of the space and should support the separation of active and passive use.

The number of park greens within the Charles River Basin is small, but with their pathways they have the potential to form critical connections to other major open spaces in the Boston metropolitan area. Restoring the physical connection between the Basin and the Fens at the Charlesgate would link it to the Emerald Necklace. A multiuse trail now under construction will tie the Basin to the Upper Charles River Reservation and regions to the west. Another trail, which will run between the Watertown Arsenal and Alewife, will connect the Charles to the Minuteman Bikeway, a regional bicycle path. The Fresh Pond Parkway section of this trail will soon be complete.

The long-sought goal of a continuous pathway for pedestrians and bicyclists around the entire Basin was achieved in the 1970s with the completion of the Dr. Paul Dudley White Bicycle Path. The longest shoreline loop path in the metropolitan area, it stretches for more than seventeen miles on both sides of the Basin. The Basin includes more than thirty-two miles of pathways, hard and soft. This total will soon increase with the construction of the new Basin pathways from the Charles River Dam to Boston's Harborwalk and to the Freedom Trail at the Charlestown Navy Yard.

Existing Conditions and Issues

Landscape Issues

The parkland landscape in the Basin is surprisingly homogeneous. A narrow palette of species and landscape styles dominates the Basin. Because the parkland is structured by the continuous line of the pathway and because of its